

assessments of the water for field use. Future plans for the water-from-exhaust system include technology demonstrations of systems embedded in a 20-ton armored vehicle, a Humvee and a 10-kilowatt generator. When asked about transition, Dusenbury replied, "Interest has significantly increased for technology insertion into the Current and Future Forces. We are providing data to support FCS and U.S. Army future tactical truck systems as well as developing a proposal for providing Humvee-based demonstrators for field demonstration and evaluation." Whether used in Current or Future Force operations, water-from-exhaust will hydrate Soldiers in desolate conditions, while reducing the logistics footprint.

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Conferences

Total Life Cycle System Management Seminar



The Institute for Defense and Government Advancement is holding a 3-day seminar July 26-28,

2004, at the Wyndham City Center, Washington, DC, to explore the best technologies, processes and research associated with Total Life Cycle System Management (TLCSM).

TLCSM is the implementation, management and oversight by the designated program manager (PM) of all activities associated with the acquisition, development, production, fielding, sustainment and disposal of a DOD weapon system across its life cycle. TLCSM drives nearly every aspect of defense acquisition and sustainment. Defense Total Ownership Cost (TOC) — and its related processes — have matured since its beginning 5 years ago. These processes include performance-based logistics, whole life costing, risk management, earned value management and value engineering, all of which fall under the DOD TLCSM concept.

All services will be represented at this seminar. Speakers include:

- Nancy L. Spruill, Director of Acquisition Resources and Analysis, Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OUSD(AT&L)).
- Alan R. Shaffer, Director of Plans and Programs, Office of the Director of Defense Research and Engineering.
- Robert Skalamera, Deputy Director of Systems Engineering and Enterprise Development, OUSD(AT&L).
- Elizabeth Rodriguez-Johnson, PM, Office of the Secretary of Defense, Reduction of TOC, OUSD(AT&L).
- COL Janet Wolfenbarger, C-17 Program Director, U.S. Air Force.
- COL Paul Croisetiere, PM, U.S. Marine Corps H-53 Upgrades.
- Anna-Marie Van Brunt, Deputy Product Manager, Robotics and Unmanned Sensors, Program Executive Office (PEO) Intelligence, Electronic Warfare and Sensors.
- Thomas Garrett, Assistant PEO (Research, Development, Testing and Evaluation), Naval Air Systems Command, under AIR-1.0 PEO.
- Ronald B. Smith, Chief, System Support Division, Unmanned Aerial Vehicle Systems Project.
- Nannette Ramsey, Army Materiel Command Value Engineering Manager, U.S. Army Materiel Systems Analysis Activity.

For more TLCSM Seminar information or to register, go to www.idga.org.

Worth Reading

The Commander's Tool — Reflections on van Creveld's Histories of Logistics, Technology and Command

This review focuses on the three van Creveld books that appeared in the Sep-Oct 2003, Nov-Dec 2003 and Jan-Feb 2004 issues of Army AL&T Magazine. The books' reviewer, Geoffrey French, is a Counterintelligence Analyst with General Dynamics and former Logistics Specialist for the U.S. Marine Corps Reserve.

"Military history may be an inadequate tool for commanders to rely on," Martin van Creveld writes, "but a better one has yet to be designed." For this reason, among others, military personnel have long turned to studying the past to provide

counsel for the future. Examining people's successes or failures helps address problems similar to those we face today and can illuminate some steps to take or avoid, depending on the historical outcome. Thus, history serves as the foundation on which military theory is built — in fact, the only possible basis, van Creveld argues. It is for these reasons that van Creveld wrote his histories and the reasons we should return to them for fresh insight.

Van Creveld, a renowned historian at the Hebrew University of Jerusalem, has long been a resource for the U.S. military as a lecturer and author. An appealing aspect of his work is his ability to address the most complex or abstract issues of warfare — those issues that play an integral role but are somehow elusive. For example, logistics and technology affect every aspect of war, from planning to execution. Their effects may be felt most in the area of command. Taken as a set, logistics, command and technology can be seen to constitute not merely the *background* for battle, but the *backbone*. If each fulfills its role well, they do not simply allow battle to happen, they can decide victory before battle ever begins. Although they do not attract as much attention as strategy and tactics, they are no less important. For this reason, subject matter experts from the military, government and academia pay close attention to these issues. From a military history perspective, van Creveld does each a service in his military classics *Supplying War* (1977), *Command in War* (1985) and *Technology and War* (1991). Their continued relevance can be seen in their timeless lessons.

Logistics Importance

Rommel



The relationship between logistics and strategy is not self-evident. Logistics appear to be an ancillary issue, clearly subordinate to strategic considerations. Historically, however, the relationship has not met that ideal. In fact, logistics have often played a tyrannical role in the past, making strategy a secondary priority. There are numerous historical examples of campaigns where brilliant strategists could not overcome the severe constraints imposed by logistics. Napoleon's campaign into Russia (1812) and Erwin Rommel's operations in North Africa (1942) are two that come to mind immediately. Conversely, logistics can play a positively decisive role as in the Franco-Prussian war where the Prussian advantage in speed of mobilization

translated directly into victory on the battlefield (see Chapter 3 of *Supplying War*). This is not to say that extensive logistical planning guarantees success.

The Allied invasion of France in World War II proved that detailed planning itself might be something that needs to be overcome rather than accommodated. LTG George S. Patton's breakout in August 1944 was accomplished despite logistics plans that ground other commanders to a slow creep. In other words, overemphasis on logistics detail can be almost as crippling as failure to account for logistics considerations. This is especially pertinent as the U.S. military builds tomorrow's logistics system.

Napoleon



In *Supplying War*, van Creveld comes to some surprising conclusions about the logistics of several campaigns. Napoleon paid a great deal of attention to the logistics plans for the 1812 invasion of Russia, and the troops arrived in Moscow with strength to fight. The enormous distances, few roads and sparse resources in Eastern Europe, however, proved

insurmountable. Similarly, Rommel's superior tactics simply could not overcome the Allied control of the Mediterranean Sea and airspace. Van Creveld argues that no amount of investment in logistics could have given Rommel enough of an edge to achieve strategic victory in North Africa.

Joint Vision 2020 refers to focused logistics — “the ability to provide the joint force the right personnel, equipment and supplies in the right place, at the right time and in the right quantity, across the full range of military operations.” Military planners must ensure that this focus is flexible enough to meet many unanticipated needs rapidly. Van Creveld calls war “the most confused and confusing of all human activities.” History has shown that war can thwart the concept that command is simply “the regular unfolding of carefully laid plans.” Military strategists must take care of logistics first, but bear in mind that overly meticulous logistics plans may be too rigid to handle unexpected contingencies on unpredictable battlefields.

Centralization Temptation

Improvements in communication technology clearly have benefits in military operations. Today's information technology allows data to be instantly collected from and distributed to an extremely large number of units and individuals simultaneously. The temptation this poses to high-level commanders is micromanagement. This temptation becomes almost irresistible when the forces make mistakes or encounter difficulty. The U.S. military saw this in the Persian Gulf War when the allied commander had to approve all bombing targets personally after a civilian shelter was mistakenly targeted. Van Creveld dissects two campaigns where the decision by high-level commanders to retain central authority led to a series of mistakes — Israeli Defense Forces in 1973 and the U.S. military in 1965-68. In both instances, communicating information up the chain of command became more important than communicating back down. Subsequently, the focus was on the rear rather than on the front-line troops, resulting in decisions being made at the wrong level, without the proper information and resulting in direct military consequences.

In contrast, Helmuth von Moltke's response to tactical errors in the Prussian campaign against Austria in 1866 was to decentralize more authority to low-level commanders, to ensure that the overall strategy could adapt to tactical failures (see Chapter 4 of *Command in War*). In the Information Age, high-level commanders will have more information than their predecessors and the temptation to retain authority rather than to trust front-line commanders will be even greater. Strategists must recognize that this is a failed model that is most likely to lead to poor integration, poor decisions and poor outcomes.

In *Command in War*, van Creveld examines specific command structures and campaigns that serve to typify their periods. In examining the opening of the 1973 Yom Kippur War, van Creveld concludes that the system was the exact opposite of the Israeli ideal of "optional control." Instead of allowing subordinate commanders maximum flexibility with occasional interference, Israeli General Headquarters reserved the important decisions for itself, meaning each subsequent commander reined in the one below him. Only a change in command personnel and dynamics improved the situation. The U.S. military experienced a similar situation in Vietnam when the Office of the Secretary of Defense often specified targets, mission parameters and personnel requirements, causing local commanders to ignore the tactical situation to meet their specified orders.

Technology Limitations

Van Creveld's examination of technology and war shows that all technology has strict limitations. If history is any indicator, U.S. dependence on technology for a portion of its military superiority — the quality and training of its personnel certainly account for a majority of it — will lead to vulnerabilities over time — whether in terms of adversary adaptation, political manipulation or exploitation of gaps in integration. Van Creveld argues that opportunities for exploiting these vulnerabilities will "increase rather than diminish with the complexity of the technology in use."

The U.S. military has already begun to see the limits of its sensors and automated systems. More will be exposed and exploited as the United States continues to engage adversaries around the world. In a more immediate sense, the United States is relearning technology's limitations as it tries to apply its technological superiority against terrorist groups such as al Qaeda and guerilla forces such as the remnants of the Iraqi military. The long-range sensors and lethal firepower that make the United States an unmatched conventional force are not ideal for these environments. And our adversaries will purposely exploit the political and technological vulnerabilities of the U.S. system (see Chapter 20 of *Technology and War*) to meet their own ends. This scene has been repeated often in modern war and should affect U.S. strategic thought by modifying foreign policy and military engagements to avoid or account for likely low-intensity or unconventional warfare.

In *Technology and War*, van Creveld looks at the myriad ways that technology has affected war and vice versa. Looking at the effect of technology over time clearly shows its strengths and limitations. The telegraph provided a great improvement in rapidity of communications, but was limited to specific physical locations for transmission and receipt of messages. The battleship went from being the focus of naval warfare to obsolescence for several reasons. Primarily, naval forces' ability to detect each other soon outdistanced battleships' artillery range. Simultaneously, air power in naval warfare tipped the balance toward aircraft carriers. Computers revolutionized information processing, but skewed information gathering (in Vietnam, in particular) so that it focused exclusively on quantifiable data, ignoring the very "factors that make war what it is." Nuclear weapons transformed warfare itself, but soon became unusable for fear that employing one would invite an unrecoverable strike.

Structure in Command

In a similar vein, technology cannot be confused with capability. Simply infusing high technology or improving communications will not improve command and control. Commanders must continually deal with less than optimum information, even though today's commanders may be inundated with information. Moreover, much of this information will be conflicting, inaccurate or irrelevant (see Chapter 8 of *Command in War*). The consequential uncertainty is best addressed by allowing the organization to react at the proper level — tactical commanders with the best understanding of situation and need — and, based on clear command authorities and training — that is the underpinnings of the command structure. When considering command structure, it is important to remember that Napoleon's revolutionary command was not due to a radical improvement in communication technology, but rather a drastic change in the approach to logistics and organization. This clearly demonstrates that technology is not as important as its implementation. Moreover, it implies that as technologies change, so must command systems.

Napoleon



The Napoleonic revolution in military affairs was based on several concepts. One was the realization that siege warfare was unnecessary. This simultaneously eliminated the need for an enormous logistics footprint to supply a stationary army and allowed an emphasis on

mobility that provided a strategic advantage. Another success was his system of command. Napoleon standardized the composition and staff of independent corps. These were deployed interchangeably, allowing a high degree of flexibility that was amplified by their ability to operate for significant periods of time on general orders.

Precipice of Revolution

Taken together, these books highlight the real revolution possible for the modern American military — the liberation of strategy. Van Creveld's works show that since logistics is a leader concern, strategy has tended to be limited, if not subjugated, to logistics concerns. Technology has traced a similar path. Ideally, technology provides commanders with new

capabilities to execute strategy. Historically, though, technology has been as limiting as it has been enabling. For every technological breakthrough that has brought battlefield advantage — tanks and the armored division — technology has also brought complications that include, but are not limited to, fuel, ammunition and spare parts, requiring even more complex logistics support.

The revolution possible for the U.S. military is to finally put strategy alone at the top, with transparent, flexible and ubiquitous logistics and technology support. The lessons that history teaches indeed show that integrating technology is difficult, and that logistics planning is demanding. But it also shows that commanders who integrate technology well understand its limitations and take advantage of its capabilities. Today's U.S. military is in a position to fully exploit technological superiority and integrate it into today's and tomorrow's command systems.

Similarly, logistics has become increasingly more complex with countless systems and innumerable parts requiring various equipment and repair specialists. In another sense, however, U.S. forces now enjoy relatively unmatched lethality, survivability and sustainability on the modern battlefield. Commanders who handle logistics well know when to take risks, and well-timed risks often lead to victory. Van Creveld's histories show the trappings of logistics, technology and command, but they also show promise for those who need history's lessons.

Editor's Note: Historical photos provided courtesy of Military Review.



LTG George S. Patton, LTG Omar Bradley and GEN Sir Bernard Montgomery meet to discuss the progress of the French Campaign. Reproduced by Signal Corps Photo Lab.